

Applicants : Nigel Paul Maynard et al.
Serial No. : 10/580,160
Filed : May 19, 2006
Page : 7 of 12

Attorney Docket No.: 65501-003US1
Client Ref. No.: SHR 504620USPR

REMARKS

This document is filed under 37 CFR § 1.114(d) in response to the final Office Action dated January 4, 2011 ("Office Action"). Applicants submit herewith a Request for Continued Examination.

Applicants have amended claims 1, 22, and 23 to more particularly point out the subject matter that they deem as their invention. Support for the amendment to these claims can be found in the Specification at page 9, lines 14-33; page 6, lines 14-18; and page 12, lines 6-9. Applicants have also amended claims 10-12 to promote clarity. Further, the incorrect dependency of claim 5 has been changed from claim 4 (previously cancelled) to claim 1. Note that claims 8, 13, and 24-30 were also previously cancelled.

Applicants have added new claims 31-33. Support for claims 31 and 32 appears in the Specification at page 9, lines 15-24, while claim 33 can find support at page 11, lines 20-33.

No new matter has been introduced by the above claim amendments.

Upon entry of the proposed amendments, claims 1-3, 5-7, 9-12, 14-23, and 31-33 will be pending and under examination.

Applicants respectfully request that the Examiner reconsider this application in view of the remarks below.

Rejection under 35 U.S.C. § 102

The Examiner maintained the rejection of claims 1-3, 5-7, 9-12, 14-18, and 22 for anticipation by Rem et al., US Patent 5,555,642 ("Rem"). See the Office Action, page 2, item 2.

Claim 1 as amended will be discussed first. This claim is drawn to a method for conditioning a lignocellulosic substrate. The method includes a step in which the substrate is placed inside a sealed pressure chamber, as well as a step in which pressure is released from the chamber such that moisture within the substrate boils. The rapid boiling of moisture forces cellular debris to be ejected from the substrate, creating voids and pathways in it.

The method of claim 1 can be used to condition a wood substrate so that it can be subsequently or concurrently treated with desired compositions (e.g., preservatives). The step in which pressure is released from the sealed chamber is critical to the method. The pressure must be released in a manner that forces moisture out of the wood substrate, thereby ejecting cellular debris to create voids that are required for treatment of the substrate with desired compositions. See the Specification at page 6, lines 11-18.

Rem teaches a process for converting low-quality wood into high-quality wood. The wood is processed in four stages, i.e., softening, drying, curing, and cooling. See the Abstract.

Rem describes the first stage, i.e., the softening stage, as one where “wood is softened in the presence of an aqueous medium at elevated temperature.” See column 2, lines 25-26. Rem teaches that the softening stage is carried out in a closed autoclave, i.e. a sealed pressure chamber. See column 5, line 67.

The second stage taught by Rem, the drying stage, has two parts. The first part of this stage, according to Rem, can be accomplished as follows: Subsequent to the softening stage, the first part of the drying stage includes a step in which the liquid phase is removed from the autoclave, followed by a controlled and gradual depressurizing of the autoclave to atmospheric conditions, in the course of which the moisture present in the substrate is partially evaporated as the temperature drops to 100°C. See column 6, lines 4-9.

Based on the above description of this drying step, a skilled person in the art would readily know that the step of depressurizing the closed autoclave is not carried out in a manner causing the moisture within the substrate to boil, thereby forcing cellular debris to be ejected from the substrate and leading to the formation of voids and pathways in the substrate, as required by amended claim 1.

Alternatively, Rem describes the first part of the drying stage where vapor is drawn off **at a constant pressure.**” See column 4, line 19. In other words, no depressurizing takes place, as required by amended claim 1.

Turning to the second part of the drying stage, Rem describes it as a part where “an external mechanical pressure [is] applied to the hot softened wood in order to compress it to a smaller volume, thus making it less porous and permeable.” See column 4, lines 26-29. Alternatively, Rem teaches that samples may be dried in a conventional microwave oven. See column 6, lines 10 and 11. No mention is made of depressurizing, or of using a sealed chamber for that matter, both of which are required by amended claim 1.

The third stage taught by Rem is a curing stage which includes processing the sample at a constant temperature from 160°C to 220°C and a pressure from 1 bar to 20 bar, for 20 to 90 minutes. See column 4, lines 42-47. Nowhere does Rem mention, with regards to the curing stage, that the substrate is placed in a sealed pressure container, as required by amended claim 1, much less that pressure is released from a container in a manner such that moisture within the substrate boils and forces cellular debris to be ejected from the substrate, as also required by amended claim 1.

Differently, Rem teaches that the curing stage is carried out in a “hot press.” See column 5, lines 11-13. In other words, this stage is not carried out in a sealed pressure container, as required by amended claim 1.

Finally, the cooling stage taught by Rem is accomplished merely by leaving processed samples in the open air. See column 5, lines 14 and 15; and column 6, lines 17 and 18. Clearly, the cooling stage of Rem is not carried out in a sealed pressure chamber, as required by amended claim 1.

In sum, of the four stages taught by Rem, only the first stage, namely, the softening stage, is carried out in a sealed pressure chamber. However, as discussed above, Rem nowhere teaches release of the pressure from the sealed pressure chamber such that the moisture within the substrate boils and forces cellular debris to be ejected from the substrate, creating voids and/or pathways in the substrate. On the contrary, the reference instead teaches the release of pressure in a **controlled and gradual** manner.

It follows that, as Rem does not teach a step requiring releasing pressure from a sealed chamber such that the moisture within a substrate boils and forces cellular debris

to be ejected from the substrate creating voids and/or pathways in the substrate, this reference does not anticipate claim 1. Nor does it anticipate claims 2, 3, 5-7, 9-12, 14-18, and new claims 31 and 32, each directly or indirectly dependent from claim 1.

Turning to independent claim 22, as amended, and new claim 33 which depends from it, these two claims both require a step of releasing pressure from a sealed chamber in such a way as to cause cellular debris to be ejected from the substrate, leaving behind voids and pathways. Like claim 1, claim 22 and 33 are not anticipated by Rem, as this reference does not teach the just-mentioned required step.

For a complete record, Applicants submit that claims 22 and 33 are patentable over Rem on an independent ground.

Amended claim 22 and claim 33 both require that the substrate sealed in a pressure chamber is heated to a temperature **below** the boiling point of water at atmospheric pressure, i.e., **below** 100°C.

As discussed above, Rem teaches heating a substrate in a sealed chamber to 100°C **or higher**. Put another way, Rem teaches heating the substrate to **at least** the boiling point of water at atmospheric pressure. It follows that, in addition to not teaching the release of pressure from a sealed chamber in such a way as to cause cellular debris to be ejected from the substrate, this reference would have led a skilled person in the art away from the temperature range required by claims 22 and 33.

For the facts and reasons set forth above, Applicants respectfully submit that claims 22 and 33 are novel over Rem.

Rejection under 35 U.S.C. § 103

The Examiner also maintained the rejection of claims 19-21, and 23 for obviousness over Rem in view of Neogi et al., US Patent Application Publication 20040258941 ("Neogi"). See the Office Action, page 2, item 4.

Claim 19, dependent from claim 1, will be discussed first. It covers a method for conditioning a lignocellulosic substrate. The method includes a step in which pressure is released from a sealed pressure chamber such that the moisture within the substrate boils

and forces cellular debris to be ejected from the substrate, creating voids and/or pathways in the substrate.

As mentioned above, Rem teaches a method for converting low-quality wood into high quality wood, in part, by heating the low-quality wood in an autoclave, i.e., a sealed chamber. Nowhere in Rem is taught or suggested releasing pressure from a sealed chamber such that the moisture within the substrate boils, leading to the formation of voids and/or pathways in the substrate, as required by claim 19.

Neogi, the other reference cited by the Examiner, does not cure this deficiency. Indeed, as pointed out by the Examiner, Neogi merely teaches a substrate impregnated with a composition. See the Office Action, page 3, first paragraph. As Neogi does not teach or suggest releasing pressure from a sealed chamber in the just-described manner, it does not rectify the deficiency of Rem.

In view of the remarks above, Applicants posit that, contrary to the Examiner's assertion, claim 19 is not obvious over Rem in view of Neogi. For at least the same reasons, claims 20 and 21, both dependent from claim 19, are also nonobvious over the cited references.

Amended claim 23, like claims 19-21, requires a step in which pressure is released from a sealed chamber such that the moisture within the substrate boils and forces cellular debris to be ejected from the substrate. Applicants submit that this claim is novel over Rem and nonobvious in view of Rem and Neogi for the same reasons set forth above.

CONCLUSION

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment.

In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

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Page : 12 of 12

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Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The Petition for Extension of Time fee in the amount of \$555.00 is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 50-4189, referencing Attorney Docket No. 65501-003US1.

Respectfully submitted,

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